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the wax plates the outlines of the sections of the organ to be reconstructed, this point, along with that on the dorsal surface, is cut out so

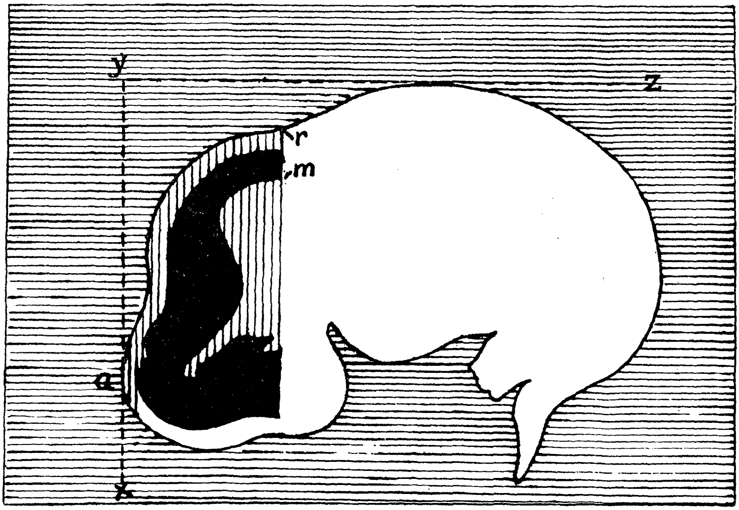

Fig. 2.

Fig. 2.—The Bristol-Board Guide. *x y z*, the dorsal and cephalic guide lines forming the right angle enclosing the figure of the embryo; *r*, the guide point in the dorsal surface and in the median plane; *m*, the guide point in the same plane on the lower surface of the neural cord.

as each to form a point of a piece of wax that remains connected with the sections of the organ by bridges of wax (fig. 1). When the series of wax sections have been cut out, they are then arranged in the bristol board guide in their proper places, care being taken that the two guide points fall within the plane of the bristol-board, and that the line passing through them is perpendicular to the dorsal line of 4–2 (fig. 2). When all are in place, nothing further, of course, remains than to smooth off the outer surface of model.—F. C. KENYON.

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

Torrey Botanical Club.—May 11, 1897.—Dr. N. L. Britton presided. Three new members were elected. Three successful excursions were reported. Resolutions were adopted commemorating Dr.

Emily L. Gregory, the late honored Professor of Botany at Barnard College, an active worker in the club. Announcement was made of the gift by President Low to the Botanical Department of Columbia of a valuable set of water-colors to illustrate mushrooms, the work of the late lamented Wm. Hamilton Gibson.

Prof. Britton made a report relative to the progress of the Botanic Garden. A beginning is made in planting the systematic herbaceous garden. Eight acres are set aside for this with the families grouped in beds; the intention is to get as many of each genus together as will grow in this climate in the open. Several hundred species are already in place, and quite a display is already produced by the beds of the Ranunculaceæ, Compositæ, Iridaceæ and Cruciferæ. Seeds of some 3,000 different species are now germinating, including 2,240 species generously sent from Kew. These will be transferred to the herbaceous garden as soon as ready. Meanwhile their permanent stake-labels are in preparation.

The paper of the evening was by Mr. Marshall A. Howe, entitled, "A Preliminary Comparison of the Hepatic Flora of California with that of Europe and of the Eastern United States."

Mr. Howe alluded to the distribution of *Cephalogia turneri*, a rare hepatic of Europe, frequent in the coast ranges of California, and occurring in limited numbers in a few localities in Ireland, England, France and the Mediterranean region.

Mr. Howe presented the following table exhibiting the comparative distribution so far as yet known.

	California.	Gray Manual Reg.
Total number of species	77	145
In common with the British Isles	34 or 44 per cent.	78 or 54 per cent.
In central and northern Europe	40 or 52 per cent.	91 or 63 per cent.
In Mediterranean region	45 or 58½ per cent.	78 or 54 per cent.
Peculiar to Pacific Coast	26 or 34 per cent.	
In common with the Gray Manual Region	37 or 48 per cent.	
Peculiar to Gray Manual Region		40 or 28 per cent.
In common with California		32 or 22 per cent.

It was shown that the hepatic flora of California has more in common with northern and central Europe than with the eastern United States, and is still more allied to that of the Mediterranean region. In particular species of Astorella and Riccia are better developed in California and southern Europe than in the eastern United States.

The apparent absence in California of Bazzania and Mylia, which are especially characteristic of medial and boreal regions, serves to heighten the similarity to southern Europe.

The paper was followed by exhibit of photomicrographs of sections of Cryptomitrium, illustrating the development of the archegonia.

In the discussion following, Prof. Underwood said that Hepatic species are most numerous in the Amazon region and the eastern slope of the Andes and in Java. Insular tropical regions have furnished many where examined, as Cuba and Jamaica. Quite a number are peculiar to Australia. New Zealand is well-supplied with species. Many have been recently collected in Africa, and have been described by Herr Stephani, of Leipsic, whose industry has doubled the number of described Hepaticæ. As a whole, the maximum development of the Hepaticæ is tropical, though some genera and certain groups within genera are wholly high-temperate or subarctic.

Prof. Britton remarking the indications of circumboreal and circumtropical distribution of certain species, referred to the argument for an equatorial distribution of flowering plants and of ferns, and queried if there were anything corresponding among Hepaticæ. He expressed the belief that it is the immediate environment which at present exerts the principal influence on distribution, whatever the original cause or mode of distribution may have been.

Prof. Underwood referred to the influence of the Gulf Stream in permitting the existence of the subtropical genus Lejeunia on the coast of Ireland, a genus not elsewhere found in Europe. Comparing the Hepaticæ of Florida, they are only in part known; a few species are in common with the Appalachian flora; most of the Florida hepatica are close-creeping forms found on bark, as *Frullania* and *Lejeunia*, having water sacs on their leaves as aid in resisting drought. Some tropical *Marchantiaceæ* occur in Florida, and also, especially, species of *Riccia* and *Anthoceros*. *Thallocarpus* is known only from Florida and South Carolina. Adjourned to May 26.

May 26, 1897.—The President, Hon. Addison Brown presided. The evening was devoted to a lecture by Mrs. Elizabeth A. Britton, entitled "The Moss Flora of the Adirondack Mountains," illustrated by lantern slides prepared by Mr. C. H. Van Brunt, and also by about 150 mounted sheets displaying specimens collected by Mrs. Britton in the vicinity of Adirondack Lodge and Lake Placid in the years 1892, 1894 and 1896. Their various habitats were described, with the story of a climb up Whiteface. About 30 rare species were enumerated, including *Raphidostegium jamesii* not previously reported from New York

State, and *Bryum conciunatum*, found only once before in the United States. Duplicates of Mrs. Britton's collection have been deposited at the State Herbarium in Albany, the main collection having been presented to the Herbarium of Columbia University. Partial sets were sent to the Brooklyn Institute, Cornell University and other collections.

After discussion by Mr. A. P. Grout, Mrs. Britton and others, the Club adjourned to the second Tuesday in October, field-meeting continuing meantime on Saturdays.—EDWARD S. BURGESS, *Secretary.*

SCIENTIFIC NEWS.

The College of Agriculture of the University of California at Berkeley was recently destroyed by fire, the loss amounting to $20,000. The building was of comparatively little value as the department had outgrown it.

Natural Science again changes publishers. With the beginning of the eleventh volume this valuable journal will be issued from the press of J. M. Dent & Co., 67 St. James St., London.

Recent Appointments, America: Robert B. Yound, assistant biologist in the department of Agriculture; Frederick L. Ransome, assistant geologist on the U. S. Geological Survey; Herbert Richards, tutor in botany in Columbia University; Jas. H. McGregor, assistant in zoology Columbia University; Dr. Frederick D. Lambert, assistant in biology, Tufts College; C. H. Townsend, chief of division of fisheries, U. S. Fish Commission; Dr. H. M. Smith, chief of the division of scientific enquiry, U. S. Fish Commission; J. F. Crawford, demonstrator of experimental psychology at Princeton; J. H. Pratt, mineralogist to the North Carolina Geological Survey; T. A. Reakard, state geologist of Colorado. At Johns Hopkins University: Dr. J. M. T. Finney, professor of surgery; Dr. J. E. Humphrey, associate professor of botany; Dr. J. B. Shattuck, assistant in geology; Dr. C. R. Bardeen, assistant in anatomy; Mr. F. C. Connant, Bruce fellow in zoology; Mr. Cleveland Abbe, Jr., fellow in geology; Mr. G. A. Drew, fellow in biology; Mr. C. W. Greene, fellow in biology; Mr. J. L. Nichols, fellow in pathology. Other American appointments are: Dr. Charles E. Beecher, professor of historical geology at Yale University; Dr. L. V. Pirsson, professor